Ann Zootech (1995) 44, Suppl, 178

Comparative investigation of volatile fatty acids, soluble glucides and cellulase enzymes activity in cattle and buffaloes

D Trasnea, M Olteanu, F Sachelarie, G Burlacu, M Nicolae

Institute of Biology and Animal Nutrition, 8113, Balotesti, Romania

Following a comparative study of the ruminal fermentation in cattle and buffaloes, we present some data on the volatile fatty acids (VFA), readily soluble glucides and cellulase enzymes activity in the rumen.

The experiment used four males of each species, weighing 275 kg in average, fistulated ruminally and fitted with cannulae. Two diets were used : alfalfa half-silage given *ad libitum* and alfalfa half-silage supplemented with a concentrate mixture (corn, sunflower meal, peas and a vitamin-mineral premix). The diets were given in two meals at 08.00 and 20.00 hours.
The ruminal liquid was sampled during daytime, ante and postprandially (at 1, 2, 4, 6 and 12 h), through the cannulae.

The highest values of the analysed parameters were at 2-4 hours postprandially in both variants and species and are given in the table below.
In cattle, the highest VFA concentration was significantly lower than in buffaloes for both diets. The molar proportion of acetic acid was significantly higher in buffaloes and that of butyric acid was significantly higher in cattle.
The highest concentrations of starch and total sugar were not significantly different between species.

For the same diet, the maximal enzymatic activity of β1.4 endoglucanase and cellulase didn't differ significantly between the studied species, and the highest enzymatic activity of β1.4 cellobiohydrolase Cx was significantly lower in buffaloes than in cattle.

	Alfalfa half-silage		Alfalfa half-silage + concentrate	
	Cattle	Buffalo	Cattle	Buffalo
Total VFA (mmol/l)	142.6[a]	160.1[b]	200.9[a]	241.3[b]
Acetic acid (%)	61.9[a]	65.2[b]	56.5[a]	62.3[b]
Propionic acid (%)	14.7	15.6	15.1	13.8
Butyric acid (%)	23.4[a]	19.2[b]	28.4[a]	23.9[b]
Starch (mg/100 ml)	85.1	90.9	413.2	447.2
Total sugar (mg/100 ml)	50.8	53.2	249.2	243.3
β1.4 endoglucanase C1 activity (mg glucose/ml)	0.661	0.579	0.796	0.727
β1.4 cellobiohydrolase Cx activity (mg glucose/ml)	0.466[a]	0.375[b]	0.412[a]	0.313[b]
Cellobiase activity (mg glucose/ml)	0.137	0.109	0.168	0.138

For each diet significant difference ($P \leq 0.05$) between species is indicated by a different letter.